



FIRE CREW FIREFIGHTER TRAINING

Procedures Handbook 4200

WILDLAND FIRE CONTROL

TOPIC: TYPES OF CONTROL LINE

TIME FRAME: 1:00

LEVEL OF INSTRUCTION: Level I

BEHAVIORAL OBJECTIVE:

Condition: Given a written quiz

Behavior: The student will confirm a knowledge of the various types of control line utilized to contain a wildland fire, the advantages and disadvantages of each method, and the tools and equipment used to support and perform each method

Standard: With a minimum of 70% accuracy

MATERIALS NEEDED:

- Writing board with markers/erasers
- Appropriate audio visual equipment and screen
- Slides/overhead transparencies for this lesson
- Student Information Sheet 4202.4-1
- Topic Quiz

REFERENCES:

- CDF Fire Protection Training Handbook 4300
- Wildland Firefighting, Clayton, Day, and McFadden, 1987

PREPARATION:

Fire crews build hand line, but firefighting is a team effort. Consequently, fire crew members find themselves working around and assisting other resources and their types of control effort as well.



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TYPES OF CONTROL LINE

PRESENTATION	APPLICATION
<p>I. WET LINE</p> <p>A. Definition</p> <ol style="list-style-type: none">1. A temporary measure used to stop the spread of fire until control lines can be constructed. results in a "water scratch line" <p>B. Mobile Attack</p> <ol style="list-style-type: none">1. A method used where terrain, fuel, and burning conditions permit a direct attack with water and access by fire engines<ol style="list-style-type: none">a) The nozzle operator follows the fire perimeter using water to extinguish flame and cool hot fuelb) The fire engine follows the nozzle operatorc) A 1½" cotton jacket hose and a combination nozzle is normally usedd) Objective is to extinguish all burning fuels along or near the fire perimetere) Must be anchored or coordinated with efforts of other units2. Advantages<ol style="list-style-type: none">a) Minimizes size of fireb) Quick control methodc) Takes heat away - reducing convectiond) Safety advantage<ol style="list-style-type: none">1) Nozzle crew can usually step into burn	



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<ul style="list-style-type: none">3. Disadvantages<ul style="list-style-type: none">a) Working in heat and smokeb) Terrain or fuel features easily stop the operationc) Poor visibilityd) Safety disadvantages<ul style="list-style-type: none">1) Heat stress2) Air drop hazards3) Danger to firefighters from fire engine driving in poor visibilityC. Progressive (extended) hose lays<ul style="list-style-type: none">1. A fire suppression tactic involving the extinguishment of successive increments of fire and the addition of lengths of hose, appliances, and lateral lines at the nozzle<ul style="list-style-type: none">a) Laterals are usually installed after every second length to maintain control and assist in mop-upb) Used in areas too steep or rough for fire engines and mobile attackc) Similar techniques of water application to those used in mobile attack<ul style="list-style-type: none">1) Accomplished at a slower more deliberate rate of forward progressd) Objective is to extinguish all burning fuels on and near the fire perimeter, in a continuous line2. Advantages	



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<ul style="list-style-type: none">a) Minimizes size of fireb) Quick control methodc) Takes heat away, reducing convectiond) Tactic is effective in a wide variety of terrains and fuelse) Safety advantage<ul style="list-style-type: none">1) Crew can usually step into burn <p>3. Disadvantages</p> <ul style="list-style-type: none">a) Tactic relies on mechanical equipment and water supplyb) Hose is vulnerable to mechanical and fire damagec) Working in heat and smoked) Poor visibilitye) Safety disadvantages<ul style="list-style-type: none">1) Heat stress2) Air drop hazards3) Tendency to rely on water flow for safety	
<p>II. DOZER LINE</p> <ul style="list-style-type: none">A. Utilizes the same principle as hand line construction, only using mechanical equipmentB. Can be used in both direct and indirect attack methodsC. Advantages	



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<ol style="list-style-type: none">1. Can be constructed rapidly in many fuel/terrain combinations2. Dozers work well in tandem3. Dozers can quickly and effectively build safety zones <p>D. Disadvantages</p> <ol style="list-style-type: none">1. Can create environmental damage<ol style="list-style-type: none">a) Erosionb) Archaeological sitesc) Steep/rocky terrain2. Cannot work in some types of terrain<ol style="list-style-type: none">a) Too steep3. Operator often exposed to hazards<ol style="list-style-type: none">a) Burnoverb) Rolloverc) Falling and rolling material4. Dozers often cover up burning material under dozer piles	
<h3>III. HAND LINE</h3> <p>A. Control line that has been constructed by personnel using hand tools and hand operated power tools</p> <ol style="list-style-type: none">1. Fire control method that is used in all areas, especially those that are too steep or rough for mechanical equipment	



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Procedures Handbook 4200

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<ul style="list-style-type: none">2. The line must be continuous but may contain segments of natural or manmade barriers, such as a road or large rock out- cropping3. Hand line can be used as either direct or indirect attack4. Advantages<ul style="list-style-type: none">a) Adaptable to various types of terrainb) Adaptable to various types of fuelc) Easily reinforcedd) It is the only logical choice in many situations5. Disadvantages<ul style="list-style-type: none">a) Time consuming. It takes a fresh 15 person crew one hour to build 300 feet of nine foot wide line in six foot brushb) Fatigue factor increases the time needed for hand line construction<ul style="list-style-type: none">1) Difficult terrain and fuel2) Higher temperaturesc) Hazard factor to personnel<ul style="list-style-type: none">1) Most remote assignments2) Most difficult terrain <p>B. Scratch line</p> <ul style="list-style-type: none">1. A quickly constructed, minimum width, temporary control line<ul style="list-style-type: none">a) Must be to mineral soil	



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<ul style="list-style-type: none"> <ul style="list-style-type: none"> b) Just wide enough to hold the fire in check 2. Used to temporarily stop the spread <ul style="list-style-type: none"> a) Used extensively during hot-spotting operations b) Usually used when two or more crews are assigned to the same flank 3. Developed for speed <ul style="list-style-type: none"> a) Crew must keep moving forward 4. Must be reinforced by completion of finished line <ul style="list-style-type: none"> a) Widening the line is often completed during the mop-up stage 5. Scratch line can be used in either the direct or indirect attack methods 6. Scratch line has been used to fire out from during emergencies C. Cold trailing <ul style="list-style-type: none"> 1. Cutting line on a fire that is already out, cold, or not burning 2. Any procedure used to secure <u>inactive</u> fire perimeter, islands or spot fires <ul style="list-style-type: none"> a) Used when fire edge appears to be out b) Used when fire edge is smoldering c) Edge of burn is generally scraped into and scattered inside the burn d) Mop-up operations proceed normally 	



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<p>3. This procedure assures that no line is left open, including the portions of the fire that went out by themselves</p> <p>IV. UNDERCUT LINE</p> <p>A. A fire line (hand line or dozer line) that is constructed on a slope, under a fire</p> <p>1. Fire line constructed across the face of a slope and below the fire's edge</p> <p>2. When a ball dropped in the burn would roll into the green</p> <p>a) Used or when crossing drainages</p> <p>b) On ridge tops</p> <p>c) Flanking the fire up a side hill</p> <p>3. An undercut line must have a trench with a good berm</p> <p>B. Trenching</p> <p>1. A ditch and berm dug on undercut line</p> <p>a) A berm is the outer, raised edge on the downhill side of the ditch or trench</p> <p>b) Where to walk on an undercut line</p> <p>1) Do not walk above the trench</p> <p>2) You can walk "in" the trench</p> <p>3) You can walk below the trench - use caution</p> <p>2. The objective is to keep rolling material, such as pine cones, mossy rocks, small logs and</p>	



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<p>similar fuels, that may be burning, from crossing the line</p> <ul style="list-style-type: none">a) The steeper the slope, the wider and deeper the trench has to be, along with a higher bermb) Adjust the size of the trench to accommodate the type of material it will be expected to hold <p>NOTE: Discuss width, depth and how clean. Hand out Student Information Sheet 4202.4-1, Trench and Berm for undercut line</p>	
<p>3. Methods and techniques of trenching</p> <ul style="list-style-type: none">a) Rocks may be used to help build the bermb) Pulaskis are used to loosen the soil and start the trenchc) McLeods and shovels complete the trench and bermd) An undercut line should be constructed double the normal line width you are cuttinge) Unburned fuel should be thrown as far downhill as possible and scatteredf) Burned or burning fuel should be thrown into the burned area a minimum of 15 feet and scattered <p>4. Safety considerations</p> <ul style="list-style-type: none">a) Side hill footing while swinging tools	<p>Display graphic 4202.4-1</p>



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<ul style="list-style-type: none">b) Extra work spacingc) Rolling rocksd) Falling trees and limbse) Rolling hot material starting spot fires below the crewf) It may be more difficult to work or the escape from the fire <p>V. FINISHED LINE</p> <ul style="list-style-type: none">A. The finished and final line<ul style="list-style-type: none">1. The line should be approximately 1-½ times the height of the dominant fuelB. Hand tools or dozers are used<ul style="list-style-type: none">1. Must be anchored2. Must be tied in3. Scraped to bare dirt (mineral soil)	<p>Administer Topic Quiz</p>



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SUMMARY:

As a member of a handcrew, you must be familiar with the types of line used to control wildland fire and be capable of producing any types of control methods that may be expected of you. You must be familiar with wet line and dozer line construction and be very proficient at all types of handline, including direct, indirect, scratch line, cold trailing, undercut line/trenching, and finished line.

EVALUATION:

The student will complete a written quiz at a time determined by the instructor.

ASSIGNMENT:

Review your notes and Student Information Sheet 4202.4-1 in preparation for the upcoming quiz. Study for the next session.